

4.3.5.1.5 *Geology and Soils*

This section discusses the environmental impacts to the geologic and soil resource as related to the construction and operation of the MOX fuel fabrication facility proposed for the Hanford, INEL, Pantex, SRS, NTS, ORR, and at an existing commercial uranium fuel fabrication facility, generic environment. A MOX fuel fabrication facility, at any of the representative sites, will involve some ground-disturbing construction activities (121 ha [300 acres]) that would affect the soil erosion potential. The key factors affecting soil erosion potential are the amount of land disturbed and climate. Specifically, the relative annual amount of precipitation is greater at many eastern areas relative to most western areas. Specifically, ORR and SRS receive a greater relative amount of precipitation than Pantex, Hanford, INEL, and NTS. Combining these key factors together, the relative soil erosion potential for a site can be categorized as slight, moderate, or severe.

No apparent direct or indirect effects on geologic resources are anticipated. Neither facility construction and operational activities or site infrastructure improvements will restrict access to potential geologic resources.

The soil erosion potential from direct (facility construction) and indirect (site infrastructure improvements) impacts associated with construction and operational activities is relatively low for many western areas, including Pantex, Hanford, INEL, and NTS. The soil erosion potential for many eastern areas including ORR and SRS during construction and operational activities is moderate due primarily to greater relative annual precipitation. The generic MOX fabrication facility could be located in either a low precipitation area or an area with a greater relative annual precipitation. Soil disturbance would occur primarily from ground-disturbing construction activities (foundation preparation) and associated building construction laydown areas that can expose the soil profile and lead to a possible increase in soil erosion as a result of wind and water action. Soil loss would depend on the frequency and severity of rain, wind velocities (increased wind velocities and durations increase potential soil erosion), and the size, location, and duration of ground-breaking activities with respect to local drainage and wind patterns.

Operational effects to the soil resource would be minimal assuming typical landscaping and ground cover improvements were employed. Net soil disturbance during operation would be considerably less than that during construction, because areas previously without ground cover would have some type of improvement (buildings, roads, and landscaping). Although erosion from stormwater runoff and wind action could occasionally occur during operation, it is anticipated to be minimal.

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